Climate report 2026

Planning for change

Bendigo Bank Agribusiness

Contents

Executive summary

The Australian agricultural sector is confronting the escalating impacts of climate change, which present tangible threats to both productivity and profitability.

A growing body of research shows that a warming trend is already contributing to increased seasonal variability. From floods in Queensland, New South Wales and Victoria to the drought in the southeast of the country, followed by destructive bushfires in Victoria in January 2026, recent events demonstrate the compounding nature of these impacts. The financial effects on agricultural producers are also increasingly clear, with research suggesting a 23 per cent downturn in annual profit between 2001 and 2020 can be attributed to seasonal variances.[3]

Increased mean temperatures, rain variability and severe weather events are already having detrimental effects on Australian agriculture. Growers now regularly face heat stress in livestock, disruptions to crop yield and quality, and limited availability of feed and water in some years. As the instances of climate-related operating challenges increase, there will be a heightened focus on mitigating such constraints.

In the meantime, the Australian and other international governments are committing to lowering country specific emissions through legislation, policies, levies and incentives. For Australia, the agriculture sector is often in the spotlight, contributing around 18 per cent of the country's total emissions.[21] Significant work towards achieving Australia's emission reduction goals in this sector has been done, as acknowledged by the Department of Agriculture, Fisheries and Forestry's (DAFF) Agriculture and Land Sector Plan, which is paving a pathway forward for the industry. Despite Australian producers already being considered as global leaders in low emission food and fibre production, there are mounting pressures on the sector to lower carbon and equivalent emissions. Government grants and the Carbon Credit Union Scheme are some of the options available to producers

Market forces are also applying pressure on the industry, as countries and companies address their own climate goals. The broader trade environment is increasingly complex, with the number of non-tariff measures increasing rapidly over the last decade – many of which related to sustainability. Several European measures are currently in place that impact some Australian agricultural exports. Furthermore, large international corporations are demanding sustainability reporting to demonstrate their credentials, particularly as consumers claim to value sustainability. Research shows that in Australia, sustainability is important for 46 per cent of consumers, but recent cost-of-living pressures take precedence in shopping behaviour.[29]

Although weather variability has always been a challenge for agricultural production, the impacts of climate change make it increasingly difficult. In addition to mitigating climate risks, the flow through of government commitments and policies, as well as market demands domestically and abroad, means there's greater pressure for producers to be aware of the changing landscape and adapt.

Escalating impacts of extreme weather events

The Australian agricultural sector is highly exposed to the consequences of a changing climate, grappling with a notable rise in the occurrence and severity of extreme weather patterns.

The Bureau of Meteorology (BOM) and CSIRO's State of the Climate 2024 report indicated that Australia's climate has warmed by an average of 1.51 ± 0.23 °C since 1910, alongside a significant decrease in winter rainfall across southern Australia.[1,2] The climate related hazards that are experienced in Australia, most of which have direct impacts on agriculture, include bushfires, floods and heatwaves to tropical cyclones, storms and drought. As climate change occurs the intensity, duration, timing or spatial patterns of these hazards can alter causing increased or new challenges for the Australian agricultural sector. These changes can have substantial impacts across Australian agriculture's productivity and profitability.

As reported by the Australian Bureau of Agricultural and Resources Economics and Sciences (ABARES) the average annual farm profit decreased by 23 per cent between 2001 and 2020, due to the effects of climate changes to seasonal conditions. These impacts are more pronounced in the southeastern and southwestern parts of Australia. ABARES also assessed that the risk of very low farm returns due to climate variability that has doubled since the year 2000[3]. Agricultural profitability continues to be clouded by additional costs associated with mitigating climate risk, particularly insurance. A growing number of regions are rapidly becoming unaffordable to insure, due to insurance premium increases. Some of the causes of these surging premiums are due to 'elevated extreme-high temperatures', which correlated with increased thunderstorms and bushfire events.[4,5] The Australian Actuaries Institute Climate Index (AACI) is used to measure climate events compared to a reference range. For the 41st consecutive time, the AACI registered a positive value in Spring 2025, signifying that the frequency of extreme weather events across Australia was higher than the average recorded between 1981 and 2010.[6]

Extreme weather events are front of mind for many Australian agricultural producers, after the Victorian bushfires in January of 2026 and flooding seen in January and March across Queensland, New South Wales and Victoria. The bushfires resulted in over 45,000 head of stock and significant infrastructure losses, alongside damages to established horticultural crops.[7] Damage extended to reduced feed availability which had only recently been recovering following drought conditions across 2025. Interactions between extreme weather phenomena are exemplified by the influence of drought conditions on how dry the landscape was in Victoria prior to the bushfires breaking out, making challenging conditions for reducing their spread.

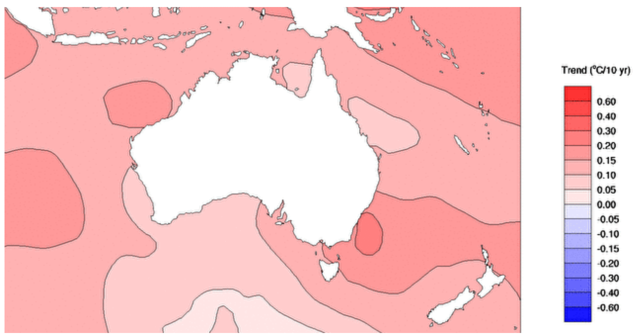

Figure 1: Sea surface level temperature trend showing increases of all sea temperatures surrounding Australia which influences weather patterns.[9]

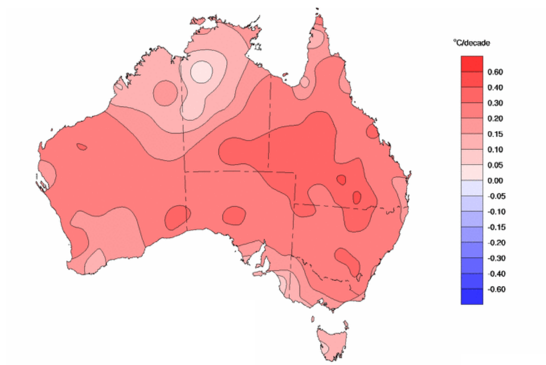

Figure 2: Mean temperature trend across Australia indicting that between 1970 and 2024 the mean temperature across the country increased.[10]

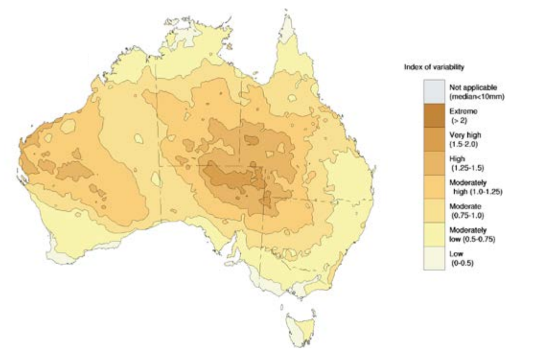

Figure 3: The rainfall variability across the country between 1900-2024 shows which areas have had large charges to the variability of rainfall over the past century.[11]

In assessing Australia's risks with regards to climate change, climate variables and drivers have been researched and highlighted in a report by the Australian Climate Service titled "Australia's Future Climate and Hazards Report".[8] This report, a part of the National Climate Risk Assessment, takes a view to what Australia's current priority hazards are in relation to climate and how they may change in the next century depending on different global warming scenarios. While a broad overview at a national level, its findings have relevance to the risks associated with Australian agriculture.

Key findings noted in the report include a wide range of results depending on models of larger or smaller temperature increases with significantly worse outcomes associated with the former. It also notes the understanding that changes are unlikely to be gradual or staggered as increased temperatures take effect. It is more likely that there will be abrupt changes, that become tipping points for many additional outcomes, including irreversible changes to ice caps, ocean circulations and ultimately sea levels and weather patterns. These changes include some that are already observable, with changes to the sea temperatures, rainfall probabilities and increasing mean temperatures seen in the figures included on page 4.

The influence of climatic shifts on key agricultural commodities

As Australian producers look to strengthen the efficiency and profitability of their businesses and manage changing weather conditions, there has been a widespread adoption of innovative practices and technologies. For example, over 90 per cent of Australia's crops are grown using minimum or no-till systems, which improves soil health and reduces erosion. The sector has also made significant strides in water efficiency, with cotton water productivity improving by 40 per cent in a decade and grain water-use efficiency increasing by 60 per cent.[12] In the sheep industry, water use per tonne of sheep meat produced has declined 7 per cent in between 2023 and 2025, while greenhouse gas emission intensity in processing reduced by 15 per cent over the same period.[13]

Nonetheless, each agricultural industry faces its own unique challenges from climate variability.

Horticulture

Australian horticulture faces a complex mix of challenges and opportunities from climate change. With many crops having temperature dependent growth stages, variations from the norm for both hot and cold temperatures could affect fruit quality, size and quantity.

Variations to winter temperatures has already seen erratic flowering, poor fruit quality and some crop failures across trees such as apples, cherries and almonds. Actual and potential increasing temperatures are a risk for fruits also, with impacts such as altering the sugar and acid balance in wine grapes. Changes to soil temperatures can also impact growth and planting windows, which when associated with other changes to rainfall or air temperature can compound negative impacts.

Some regions may see a decrease in climate suitability for chosen crops due to more high-heat days. Conversely, fewer frost days could protect flowering and even allow for the expansion of some crops into more southerly regions. The sector will also have to contend with increased water demand due to higher evapotranspiration rates. The trend for rainfall shows a decline in annual rainfall across much of southeastern and southwestern Australia (see figure 4). This decrease in rainfall increases the requirement for irrigation, which can be impacted by the lack of surface water runoff into water sources available for producers. Water licensing requirements across most agricultural areas alongside the water market will increase the cost of water availability, proving challenging for growers, in particular those with annual crops.

On the other side of the coin, more intense rainfall events may risk damage to crops and result in a higher risk of fungal disease. Increases in rainfall can also cause greater erosion impacts with ground cover being an important first line of defence.

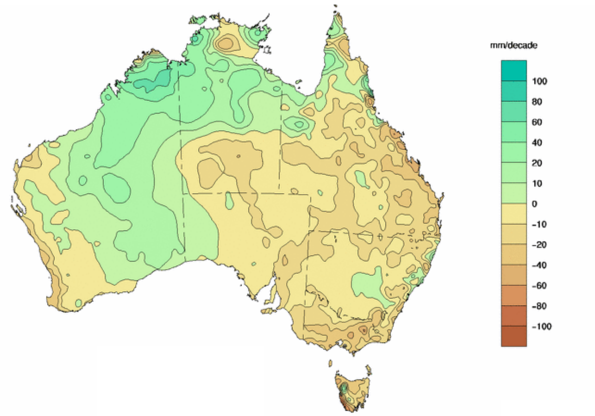

Figure 4: The changing trend in Australian rainfall between 1970 and 2024 shows that while there are some areas where rainfall has increased, many agricultural areas of the country have had reduction in total rainfall.[14]

Cropping

Australia's grain industry, particularly wheat production, is highly exposed to the impacts of a warming and drying climate.

Projections show that without adaptation, wheat yields could decline by between 5 per cent and 41 per cent by 2080.[15] The most significant impacts are expected in the cropping zones of Western Australia, which are projected to become drier, and where profits could drop by as much as 32 per cent by 2050.[16] Increased temperatures, especially during the grain-filling stage, would be detrimental to yield and quality. Although there may be a reduction in frost events from a rise in temperature the rise in heat stress days would become a greater issue. Furthermore, while elevated CO_2 levels could have a positive fertilisation effect on plant growth, this is likely to be offset by the negative impacts of higher temperatures and lower rainfall.

Soil moisture availability, particularly in southern Australia, will be greatly influenced by the longer-term trend of a decline in autumn and winter rainfall. With moisture availability at the start of a growing season a vital element of decision making in crop establishment, changes to rainfall patterns across the grain growing areas of the country could have devastating impacts.

Dairy

The Australian dairy industry is particularly vulnerable to climate change due to the high sensitivity of dairy cattle to heat stress from increases in temperature and humidity.

Increased frequency and intensity of heatwaves will likely lead to reduced milk production, decreased fertility, and higher mortality rates. The dairy industry in Victoria is projected to have a reduction in milk supply by up to 15 per cent by 2070 due to heat stress of cattle if no further climate adaptation is adopted.

Forage quality is also expected to decline, with rising temperatures and CO_2 levels potentially reducing the protein content and digestibility of pastures. Changes in rainfall patterns will also affect pasture growth and water availability, further stressing production systems. The industry can adapt by implementing strategies such as providing more shade and cooling for cattle and selecting for more heat-tolerant breeds.

Cattle

The Australian beef industry, utilising over 80 per cent of Australia's agricultural land, faces significant challenges from climate change.[17]

Producers will have to contend with increased livestock heat stress, which can reduce weight gain and reproductive rates, particularly for *Bos taurus* breeds in southern Australia. Changes in the amount and timing of rainfall will alter pasture composition and productivity, and increased CO_2 levels may favour woody plants over grasses, reducing grazing yields. In general, maintaining ground cover in the face of an increasing frequency of intense rainfalls and reduced soil moisture profiles will prove a material challenge.[18]

While some northern regions with hardier *Bos indicus* cattle might see a slight increase in productivity due to a longer growing season, the overall trend points towards a more challenging environment. The industry is actively pursuing a goal of being carbon neutral by 2030 (CN30) to mitigate its own climate impact and enhance its global competitiveness. There is investment in providing access to low-methane pasture, testing of new feed supplements, and genetic tools that can help identify breeds producing lower emissions.

Sheep and wool

Increased heat stress is a major concern for Australian sheep producers, leading to lower reproductive rates and slower growth in lambs.

The availability and quality of pasture and fodder crops are also under threat from lower rainfall and higher temperatures, which will strain water resources and could increase land degradation. A greater frequency of extreme weather events could lead to increased risk of lamb mortality as well as creating greater risks for pastures when considering erosion control. However, higher minimum temperatures may result in lower lamb mortality and fewer post-shearing losses.

Furthermore, southern Australian sheep and wool producing regions will be at a higher risk of bushfires and drought. The geographic distribution of pests and diseases that affect sheep is also likely to change with warming conditions. Internal parasite resistance is a trait that is being prioritised in breeding of sheep in a way to confer better immunity, reduced drenching costs and lower production losses.

Research indicates that without adaptation, wool production could be reduced by up to 95 per cent in some parts of south-eastern Australia by 2050.[19] Animals experiencing heat stress tend to reduce their feed intake, which in turn impacts their fleece production, with lighter fleeces shorn from animals under stress. Stress can also impact the micron and overall quality of a fleece, with consistent, clean fibres able to attract a higher price.

Australia's sustainability position in a global agricultural market

Australian producers are global leaders in low-emissions food and fibre production with agricultural emissions falling 20 per cent since the 1990s, while also achieving a 60 per cent increase in outputs, despite utilising less land.[20] Advances across Australian agriculture have seen emissions decrease to be more than 42 per cent lower than other peer nations, such as the United States and Japan, over the three-year period from 2018 to 2020 (inclusive).

As the global focus on mitigating climate change intensifies, Australia has committed to achieving net zero emissions by 2050 under the Paris Agreement. This includes a reduction in greenhouse gas emissions by 43 per cent below 2005 levels, by the year 2030 and a 62–70 per cent reduction compared to 2005 by the year 2035. All sectors that contribute to Australia's economy are expected to work towards this goal, but agriculture is often seen as a target industry despite only accounting for 18 per cent of Australia's carbon emissions based on figures from 2021–2022.[21]

In action to support Australia's emissions reduction commitment, the Federal Government's Net Zero Plan contains the Agriculture and Land Sector Plan, which establishes a framework for the agriculture sector's contribution, focused on three key objectives: reducing sectoral emissions, enhancing carbon storage in landscapes, and boosting climate resilience and adaptation. The Commonwealth's Department of Agriculture, Fisheries and Forestry (DAFF) Agriculture and the Land Sector Plan has acknowledged the valuable contributions that have already been made in working towards Australia's emissions reduction goals and is helping to set a pathway forward for the agricultural industry.

To accelerate and incentivise the progress of these objectives, several policy updates have been introduced since the end of 2025. New and refined methodologies have been developed as part of the reform and expansion of the Australian Carbon Credit Unit (ACCU) Scheme, moving beyond the foundational soil carbon and herd management methods. For instance, more accessible methodology for "Integrated Farm and Land Management" is intended to allow producers to stack multiple environmental benefits, such as biodiversity improvements and carbon sequestration, into a single project.[24]

Furthermore, DAFF has launched a new round of grants under the National Soil Action Plan specifically targeted at increasing the adoption of practices that have proven co-benefits for both soil carbon and drought resilience.

In line with focusing on addressing agricultural emissions, the government introduced the 'Low-Emission Livestock Feed and Genetics Program' in early 2026. This program provides direct financial incentives and rebates to producers for the adoption of verified low-methane feed supplements, including *Desmanthus* and seaweed such as *Asparagopsis*, and for investment in genetic selection programs focused on lessening animal carbon equivalent emissions.[25, 26]

Alongside emission targets under the Paris Agreement, Australia and other international countries are targeting climate and sustainability reporting. This reporting is becoming increasingly important for Australian businesses, including those in the agricultural sector as companies look to demonstrate knowledge of, and reduce emissions of their product and supply chains.

The *Treasury Laws Amendment (Climate-related Financial Disclosure) Bill 2024*, introduced to Parliament in March 2024, mandates climate-related financial disclosures for large businesses, otherwise known as the Australian Sustainability Reporting Standard AASB S2. This requires companies to report on their climate-related risks and opportunities, including the emissions contained within their value chains, which will impact producers. This reporting standard provides a consistent national approach to sustainability reporting for the agricultural industry.

Australia's carbon emissions based on figures from 2021–2022.[21]

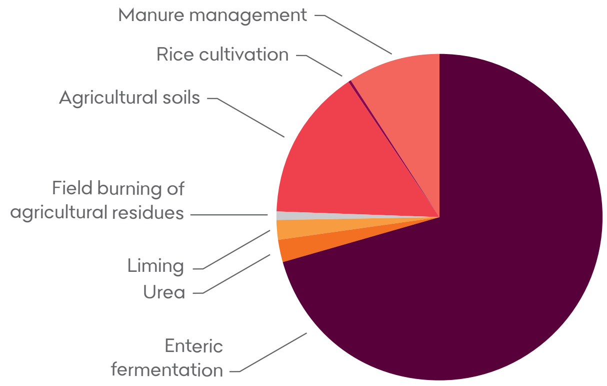

Figure 5: The breakdown of agriculture's emissions (enteric fermentation includes methane emissions form livestock, mainly beef and dairy cattle).[22, 23]

Market access and trade requirements

As a major agricultural exporter, Australia is subject to the evolving sustainability and climate change requirements of its trading partners. The number of non-tariff measures impacting trade has increased rapidly over the last decade, many of which are related to sustainability in some form. As a result, the trade environment is increasingly complex and many of these measures can act as market access barriers for Australian agricultural products.

Types of trade measures related to sustainability:

- **Non-tariff barriers or measures**: often related to sanitary and phytosanitary measures, and technical barriers to trade such as testing, labelling or certification requirements.
- **Environment-related provisions in regional trade agreements**: often linked to agriculture and aim to promote sustainable development, enhance environmental cooperation, commit parties to implement and strengthen domestic agri-environmental law and policies.
- **Environmental trade preferences**: incentives such as reduced tariffs or tariff rate quotas for agricultural products that are produced in an environmentally sustainable manner (currently seen related to palm oil).
- **Environmental market access measures in national regulatory frameworks**: make the eligibility of agricultural products for certain government programs or their access to specific markets conditional on meeting environmental criteria. Current examples include deforestation regulations and maximum residue limits (MRL), which aim to prevent commodities linked to these issues from entering particular markets.

Environmental market access measures, such as the European Union (EU) Deforestation Regulation, UK Environment Act and EU MRLs, have been of particular concern for Australian agricultural exports. Australian soybean and cattle products for example, would need to meet due diligence and traceability requirements to maintain access to the EU and UK markets.[27] Reduced MRLs for certain pesticides would also require adjustment to product practices to comply with stricter environmental-based MRLs.

The EU has also implemented other measures aimed at achieving a net-zero emissions economy by 2050 which are impacting trade partners, such as the Carbon Border Adjustment Mechanism (CBAM). This acts as a tariff on imports based on carbon emissions that are generated during their production. While it has not been applied to agriculture at this point, it currently applies to key inputs such as urea and fertiliser more broadly. Any products that are traded through the EU are now subject to additional costs and checks, increasing costs to purchasers.

Both the EU's Deforestation Regulation and CBAM are not covered in the recently ratified Australia-European Union Free Trade Agreement, and the Australian government says they will continue to engage the EU on these matters. Notably however, this marks the first free trade agreement that makes a binding commitment to implement obligations under the Paris Agreement on climate change (for both Australia and the EU).

To help maintain and grow market access within Australia and overseas, the Australian agricultural sector is focused on demonstrating its sustainability credentials through frameworks like the Australian Agricultural Sustainability Framework (AASF). Through the AASF, producers may have opportunities to enter markets with buyers willing to pay a premium for ethical and environmental credentials and supports the social licence of producers and the industries they operate within. The framework can also be used to demonstrate the ability to meet standards that result in a levy when non-compliant, such as in the CBAM.

Standards can be set at government or at corporate levels with large companies like McDonalds and Nestlé having public commitments to reduce their Scope 3 emissions (and meet the requirements of Australian Sustainability Reporting Standards AASB S2), including emissions originating in their supply chains. Similar to sustainability reporting commitments, being able to measure, report and reduce emissions to help meet corporate goals will place growers in good stead to maintain large commercial contracts.

Finance companies have policies regarding to finance lending and emissions as they also consider their contributions. Demonstrating that climate risk is being addressed will assist in lending applications as financiers assess their own climate risk in lending portfolios.

Sustainability's fight for priority in Australian consumer shopping behaviour

Australian consumers are increasingly prioritising sustainability in their purchasing intentions and decisions. A 2023 study showed that 75 per cent of Australian consumers want companies to have a clear stance on sustainability. Over 40 per cent of online shoppers prioritise ethical brands, and more than 75 per cent frequently buy locally sourced goods. This trend is shaping the domestic market, with businesses that embrace sustainable practices aiming to build stronger brand loyalty and a competitive edge.[28]

However, consumer demand for sustainably produced products remains fickle, with price, overall value and convenience being prioritised above sustainability when pressured. As such, the current cost of living crisis is the primary driver of purchasing behaviour, despite research showing that sustainability is still an important factor for 46 per cent of Australian consumers.[29] There is also some overlap with sustainability savings and budget considerations, including the introduction of selling imperfect fruit and vegetables for a discount.

Placing visually imperfect but otherwise high-quality produce on sale at a discounted price point reduces wastage and increases the options available to consumers, as well as providing an additional income without having to seek out alternative uses for produce. This is also playing out with upticks in solar panel installations and increased consideration of electric vehicles and hybrids which can save individuals money in a cost constrained environment.

Available tools and incentives for producers

A number of emissions calculators are available for Australian producers to estimate their on-farm greenhouse gas emissions. In August 2025, the Australian Government announced a $6.4 million grant to Agricultural Innovation Australia (AIA) to improve the consistency of these calculators. This will provide farmers with more reliable data to inform their decision-making and support their engagement with their value chain. While there are currently no direct government incentives for producers to calculate their emissions, the ability to demonstrate a low-emissions profile is becoming increasingly important for accessing markets and finance as discussed above.

Calculator options include:

Primary Industries Climate Challenges Centre Including livestock and cropping calculators	www.piccc.org.au/resources/Tools.html
Australian Dairy Cabon Calculator Supported by Dairy Australia	www.dairyaustralia.com.au/climate-and-environment/greenhouse-gas-emissions/australian-dairy-carbon-calculator
Agricultural Innovation Australia's Environmental Accounting Platform A carbon calculation engine for Australian agriculture, fisheries and forestry sectors	www.aiaeap.com
Ruminati A paid emissions management service that can help provide emissions calculations and management options	www.ruminati.com.au

There are some financial incentives available for those inclined to invest time and resources into calculating and potentially reducing their emissions. These include the Australian Carbon Credit Unit (ACCU) Scheme, which allows producers to earn carbon credits for taking actions that reduces release of greenhouse gasses or removing and/or storing carbon. Some individual states have schemes set up, such as in Tasmania the Carbon Farming Advice Rebate Program can provide producers with rebates of up to $10,000 for seeking advice regarding accessing carbon credits.

There's a strong focus on balancing agricultural production with environmental stewardship. Regenerative agriculture practices, which focus on restoring soil health and biodiversity, are gaining traction. These practices include cover cropping, no-till farming, and agroforestry, which improve soil structure, fertility, and carbon sequestration. The Australian Government is supporting these practices through programs like the Emissions Reduction Fund (ERF), which provides financial incentives for farmers to sequester carbon and reduce greenhouse gas emissions.

Producers should consider engaging with their banking contacts/financial planners/accountants to understand how these schemes may influence their financial and security positions.

How to assess if a soil carbon project is beneficial?

Step	Action	Key Questions to Answer
Eligibility Check	Review the requirements of the Emissions Reduction Fund (ERF) soil carbon methodology.	Is my land eligible? Have I undertaken activities in the past that would exclude me?
Land Assessment	Identify the specific areas (Carbon Estimation Areas) on your farm suitable for the project.	Which paddocks have the highest potential for increasing soil carbon? Are there areas with limitations (e.g., very sandy soils, high rainfall variability)?
Practice Change Analysis	Determine what new and additional land management practices you can implement.	Can I change from conventional tillage to no-till? Can I introduce new pasture species, change my grazing management, or apply soil amendments? These changes must be new to be eligible.
Initial Soil Testing	Conduct baseline soil tests to establish your starting soil organic carbon (SOC) levels.	What is my current SOC level? This is critical for measuring future increases.

Table adapted from Clean Energy Regulator, Emissions Reduction Fund.[30]

Cost-Benefit Analysis

A soil carbon project has significant upfront and ongoing costs that must be carefully weighed against the potential revenue from selling ACCUs.

Upfront Costs:

- Project registration and legal fees.
- Baseline soil sampling and laboratory analysis.
- Consultant or project developer fees for the feasibility study.

Ongoing Costs:

- Implementation of new management practices (e.g., new machinery, different pasture seeds).
- Ongoing soil testing and monitoring.
- Reporting, auditing, and project management fees.

Potential Revenue:

- The price of ACCUs can be volatile and modelling price scenarios are recommended.
- The rate of carbon sequestration is not guaranteed. It can vary significantly depending on soil type, climate, and management practices.

Evaluate the Co-Benefits and Agronomic Advantages

In addition to revenue from carbon credits, there are several co-benefits of soil carbon projects that can support a farm's productivity and resilience.

- Improved Soil Health: Higher soil carbon levels lead to better soil structure, increased water-holding capacity, and enhanced nutrient cycling.
- Increased Productivity: Healthy soils can lead to higher crop yields and better pasture growth.
- Enhanced Resilience: Improved water retention makes your land more resilient to drought, which is a major benefit in Australia's variable climate.
- Reduced Input Costs: Healthier soils may require less fertiliser over time.

Nonetheless, producers should consider the risks and implications of the long-term commitment:

- Permanence Obligation: You are legally required to maintain the stored carbon for the duration of the permanence period (25 or 100 years). If carbon is lost (e.g., through drought, fire, or a change in land use), you may have to give back or purchase ACCUs to cover the loss.
- Market Risk: The price of ACCUs can fluctuate significantly.
- Performance Risk: There is no guarantee that your project will sequester as much carbon as predicted. Climate variability can impact sequestration rates.

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